

Illinois Environmental Protection Agency
Bureau of Air, Permit Section
Springfield, Illinois

Project Summary for a
Construction Permit Application
from Electro-Motive Diesel
for New Engine Durability Test Cells MU 6 and MU 7
at its Manufacturing Facility in McCook, Illinois

Site Identification No.: 031174AAA
Application No.: 12070033
Date Received: July 18, 2012

Schedule

Public Comment Period Begins: November 15, 2012
Public Comment Period Closes: December 15, 2012

Illinois EPA Contacts

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I. INTRODUCTION

Electro-Motive Diesel, Inc. (EMD) has requested a construction permit to install two new engine durability test cells, MU 6 and MU 7. The new test cells would be used by EMD as part of its work to develop engines that meet USEPA's new Tier 4 engine emission standards and for other development work for the large engines that it manufactures. As part of this project, two existing durability test cells, Cells MU 3 and MU 4, will be permanently shut down.

The Illinois EPA has reviewed EMD's application and made a preliminary determination that the application for the proposed project meets applicable requirements. Accordingly, the Illinois EPA has prepared a draft of the construction permit that it would propose to issue for the proposed project. However, before issuing the permit, the Illinois EPA is holding a public comment period to receive comments on the proposed issuance of the permit and the terms and conditions of the draft permit.

II. PROJECT DESCRIPTION

EMD manufactures locomotive components and diesel engines at its McCook facility. The plant is located on a large site in an industrial area in McCook.

As part of the development of improved engines, EMD operates "durability" test cells where engines with new designs or new components are operated to verify the reliability or durability of those new designs or components in actual operation.

The current project, the addition of two new durability engine test cells, Cells MU 6 and MU 7, will support EMD's work to develop engines that meet applicable emission standards adopted by USEPA for locomotive engines.¹ To meet these new standards, EMD must develop refinements to the engines that it manufactures, including measures to enhance control of emissions. The new test cells will also support both current and future work by EMD to generally improve the fuel efficiency and other attributes of the engines that it manufactures.

The principal air pollutants emitted from the new test cells are the principal pollutants emitted from diesel engines, i.e., nitrogen oxides (NO_x) and carbon monoxide (CO). Diesel engines are also sources of volatile organic material (VOM), particulate matter (PM) and sulfur dioxide (SO₂). As diesel engines burn fuel, they also emit carbon dioxide (CO₂), which is now regulated as it is a greenhouse gas (GHG).

III. PROJECT EMISSIONS

The future annual emissions of the new test cells, as would be allowed by the construction permit, are summarized below. It is expected that actual emissions would

¹ In 2008, USEPA adopted rules to significantly reduce emissions from diesel locomotives (see 40 CFR Part 1033). When fully implemented, the rules are expected to cut particulate matter emissions from these engines by as much as 90 percent and nitrogen oxide emissions by as much as 80 percent. The new standards become effective in phases or "tiers." Most significantly, new engines manufactured in 2015 and later will have to meet stringent Tier 4 Standards. New USEPA standards will also apply to existing locomotive engines when they are remanufactured.

typically be less than the permitted emissions as the test cells would typically operate at less than their permitted capacity.

Permitted Annual Emissions of the Project (Tons/Year)

NO _x	CO	VOM	PM/PM ₁₀ /PM _{2.5}	GHGs (as CO ₂ e)
159.1	49.4	15.6	5.7	46,000

This project will be accompanied by a decrease in emissions from the shut down of two existing Durability Test Cells, Cells MU 3 and MU 4.

IV. APPLICABLE EMISSION STANDARDS

All emission sources in Illinois must comply with Illinois Pollution Control Board emission standards. The Board's emission standard represents the basic requirements for sources in Illinois. The application shows that the proposed project will readily comply with applicable state emission standards, including the emission standards and regulations of the State of Illinois (35 IAC Subtitle B).

There are federal emission standards for stationary diesel engines, i.e., Standards of Performance for Stationary Compression Ignition Internal Combustion Engines, 40 CFR 60 Subpart IIII, or Standards of Performance for Stationary Spark Ignition Internal Combustion Engines, 40 CFR 60 Subpart JJJJ. These standards apply to sources where stationary engines are being used. However, test cells or test stands where the operation of engines is being evaluated are not subject to these standards.

V. APPLICABILITY OF NEW SOURCE REVIEW

This project will not constitute a major project for purposes of New Source Review rules, i.e., state rules for Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203, and the federal rules for Prevention of Significant Deterioration (PSD), 40 CFR 52.21. In particular, EMD has addressed the applicability of MSSCAM and PSD in the application, demonstrating that this project will not be accompanied by significant increases in emissions.

For emissions of NO_x, the new test cells are not a major project because the project will be accompanied by contemporaneous decreases in NO_x emissions from shut down of two existing test cells, Cells MU 3 and MU 4. As a result, as described in Attachment A, the net increase in NO_x emissions is not significant. For other pollutants, EMD does not rely on accompanying decreases in emission from the shut down of the existing test cells, as the emissions of the new test cells are not projected to be significant.

Because of the differences in provisions of MSSCAM and PSD that apply to "netting," separate netting demonstrations were provided for MSSCAM and PSD. Under MSSCAM, the contemporaneous time period starts on July 2007, five years before the application for this project was submitted. Under PSD, this period starts later, since it begins five years before construction on the current project is expected to commence. The netting demonstrations address creditable increases and decreases in NO_x emissions during the relevant time periods.

The contemporaneous increase in NO_x emissions from other projects for which construction permits have been issued in the contemporaneous period is 154.0 tons/year, based on the permits issued for those projects. The timing of the contemporaneous period was not a key factor for the accounting of increases as the “other projects” are all relatively recent.²

Since the shut downs of Cells MU 3 and MU 4 will both occur in the future, the credibility of these emission decreases is not affected by the timing of the contemporaneous time period.³ However, the amount of the contemporaneous decrease in NO_x emissions is different under MSSCAM and PSD because they have different definitions for actual emissions.

For purposes of PSD, consistent with 40 CFR 52.21(b)(3)(i) and 52.21(b)(48)(ii), EMD determined the decreases in NO_x emissions from the shut down of Test Cells MU 3 and MU 4 as their actual annual emissions from 24-month averages of actual emissions during the previous 10 years.⁴

For purposes of MSSCAM, the decrease in emissions of NO_x from the shut down of Test Cell MU 3 was determined from the two-year period immediately preceding the submission of the permit application, i.e., July 2010 to June 2012. This is the standard approach to determining emissions decreases under MSSCAM. The decrease from Test Cell MU 4 was determined from another two-year period that the Illinois EPA determined to be more representative of normal operation of Test Cell MU 4, i.e., August 2005 through July 2007. This two-year period is considered more representative of normal operation than the period immediately preceding the submission of the application. This is because Test Cell MU 4 has been used as part of EMD's campaigns to comply with federal emission standards for the engines that it manufactures, including EMD's current campaign to comply with Tier 4 Standards. However, as compared to the operation of Test Cell MU 3 and operation during EMD's last campaign, the operation of Test Cell MU 4 is now ramping up more slowly than the operation of Test Cell MU 3. Accordingly, the last two years of operation of Test Cell MU 4 should not be considered representative of its normal operation.

The conclusion of these netting demonstrations was that the net “increases” in NO_x emissions for this project would not be significant for either MSSCAM or PSD. For MSSCAM, the net increase is 39.9 tons/year. For PSD, the project is accompanied by a decrease in NO_x emissions of 20.6 tons/year.

² In particular, Construction Permit 09120034 was issued in February 2012 for new Research and Development (R & D) Test Cells 7 and 8, with permitted NO_x emissions of 111.9 tons NO_x/year. Construction Permit 07120050 was issued in August 2010 for R&D and Production Test Cell Platform with permitted NO_x emissions of 32.0 tons/year.

³ The timing of the contemporaneous period did result in the shut down of another test cell, Cell MU-2, which had previously been relied upon for the permitting of new R & D Test Cells 7 and 8, not being a creditable decrease in NO_x emissions for purposes of the current project. As related to the current project, either the shut down of Test Cell MU 2 is no longer contemporaneous or its actual NO_x emissions are zero.

⁴ For Test Cell MU 3, actual NO_x emissions were based on the period of July 2011 through June 2012. For Test Cell MU 4, emissions were based on the period from March 2003 through February 2005.

VI. PERMIT CONDITIONS

The conditions of the permit set forth the air pollution control requirements that apply to new Test Cells MU 6 and MU 7. These requirements include the applicable emission standards that apply to these test cells.

The permit also establishes enforceable limits on the amount of emissions for which the project is permitted. In addition to limits on emissions, the permit includes operational limits for the amount of fuel used by the test cells. This is necessary to make the emission limits practically enforceable.

The permit also establishes appropriate compliance procedures for the ongoing operation of the new test cells, including requirements for recordkeeping and reporting. These measures are imposed to assure that the operation and emissions of the new test cells are appropriately tracked to confirm compliance with the various limits and requirements for the cells.

In addition, the permit includes conditions requiring existing Test Cells MU 3 and MU 4 to permanently cease operation when the new test cells begin operation. Because the new test cells would replace these existing test cells, the existing test cells must be shut down no later than 180 days after initial startup of the new test cells. This provides for a reasonable shake down of the new cells prior to the transition from the existing test cells to the new test cells.

VII. REQUEST FOR COMMENTS

It is the Illinois EPA's preliminary determination that the application for the proposed project meets applicable state and federal air pollution control requirements. The Illinois EPA is therefore proposing to issue a construction permit for the new engine test cells.

Comments are requested on this proposed action by the Illinois EPA and the conditions of the draft permit.

Encl.: Attachment A

Attachment A

Net Changes in NO_x Emissions (Tons/Year)

	MSSCAM	PSD
Current Project Emissions	159.1	159.1
Contemporaneous Decreases ^a	- 273.2 ^b	- 333.7 ^c
Contemporaneous Increases	154.0	154.0
Net Change	39.9	- 20.6
Significant Emission Rate	40	40

- ^a NO_x emissions decrease from required shut down of Test Cells MU 3 and MU 4.
- ^b The decreases in NO_x emissions is the past actual baseline emissions based on average annual actual emissions from test cells MU 3 and MU 4, using representative two-year period of normal operation from the five-year contemporaneous period for MSSCAM.
- ^c The decreases in NO_x emissions is the past actual baseline emissions based on average annual actual emissions from test cells MU 3 and MU 4, using representative two-year period of normal operation from ten-year look-back period for PSD.